

PENDING CLAIMS

1. A shaped particle for use in treating a bone deficiency wherein said particle is shaped for use in an array of particles interlocked with one another, comprising:

a center portion; and

at least four tapered extremities projecting from said center portion wherein said projections provide for interstitial spaces between adjacent extremities, each extremity having a base attached at said center portion, an opposite point, a length, and a circular transverse cross-sectional configuration, wherein said interstitial spaces of one said particle will accept at least one extremity of an adjacent said particle to facilitate interlocking of adjacent particles in said array.

2. The particle of Claim 1 wherein at least three of said extremities lie in a plane.

3. The particle of Claim 1 wherein said particle has six extremities.

4. The particle of Claim 1 wherein said particle is comprised of a material selected from the group consisting of ceramic, bioactive glass, polymer, polymer/ceramic composite, and polymer/glass composite.

5. The particle of Claim 4 wherein said ceramic is comprised of a calcium salt.

6. The particle of Claim 5 wherein said calcium salt is selected from the group consisting of calcium sulfate, calcium carbonate, calcium phosphate and calcium tartarate.

7. The particle of Claim 6 wherein said particle is comprised of calcium sulfate.

8. The particle of Claim 7 wherein said calcium sulfate is in the form of gypsum.

9. The particle of Claim 6 wherein said particle is comprised of bioactive glass.

10. The particle of Claim 4 wherein said particle is comprised of a polymer.

11. The particle of Claim 10 wherein said polymer is selected from the group consisting of polypropylene, polylactic acid, polyglycolic acid and polycaprolactone.

12. The particle of Claim 4 wherein said particle is comprised of a polymer/ceramic composite.

13. The particle of Claim 4 wherein said particle is comprised of a polymer/glass composite.

14. The particle of Claim 1 wherein said particle has a diameter of about 3-10 millimeters.

15. The particle of Claim 1 wherein said particle has a diameter of about 4-8 millimeters.

16. The particle of Claim 1 wherein said particle has a diameter of about 6 millimeters.

17. The array of Claim 1 wherein said array contains multiple particles.

18. The array of Claim 17 wherein said multiple particles are in a mixture of particles comprised of different materials.

19. The particles of Claim 18 wherein said different materials are selected from the group consisting of ceramic, calcium salt, bioactive glass, polymer, polymer/ceramic composite, and polymer/glass composite.

20. The particle of Claim 1 wherein said treatment of a bone deficiency is selected from the group consisting of augmentation of bone, repair of bone, replacement of bone, improvement of bone, strengthening of bone and healing of bone.

21. The bone deficiency of Claim 20 wherein said bone deficiency is selected from the group consisting of a fracture, break, loss of bone, weak bone, brittle bone, hole in bone, void in bone, disease of bone and degeneration of bone.

22. The disease of Claim 21 wherein said disease is selected from the group consisting of osteoporosis, Paget's disease, fibrous dysplasia, osteodystrophia, periodontal disease, osteopenia, osteopetrosis, primary hyperparathyroidism, hypophosphatasia, fibrous dysplasia, osteogenesis imperfecta, myeloma bone disease and bone malignancy.

23. The array of Claim 1 wherein said interlocking of said adjacent particles in said array provides adequate porosity to allow ingrowth from a host bone.

24. The array of Claim 23 wherein said porosity is between about 40% and about 80%.

25. The array of Claim 23 wherein said porosity is between about 60% and about 80%.

26. An array of shaped particles wherein said array comprises a plurality of shaped particles, said shaped particles comprising:

a center portion; and

at least four tapered extremities projecting from said center portion wherein said projections provide for interstitial spaces between adjacent extremities, each extremity having a base attached at said center portion, an opposite point, a length, and a circular transverse cross-sectional configuration, wherein said interstitial spaces of one said particle will accept at least one extremity of an adjacent said particle to facilitate interlocking of adjacent particles in said array of shaped particles, wherein said array of shaped particles provides for treating a bone deficiency.

64. (New) The particle of Claim 1, wherein the particle is ceramic.